CHAPTER 6 FIRE SUPPORT

CONTENTS

You have a fire support coordinator (FSCOORD) at each echelon of command from company through brigade. His first obligation is to provide you with fire support that accomplishes your mission and keeps soldiers alive in combat. His place of duty is where he best meets your needs or objectives.

COMBINED ARMS COMMANDERS FIRE SUPPORT DUTIES AND RESPONSIBILITIES (FM 6-71)

The maneuver commander's duties include:

- Ensuring your guidance for fire support is clear. What do you want fires to accomplish, where do you want the fires, and when do you want the fires?
- Synchronizing fire support with the scheme of maneuver.
- Ensuring your staff comes together to integrate obstacles, reconnaissance, and surveillance (R&S), fires, and maneuver.
- Approving the fires paragraph, high-payoff target list (HPTL), and the attack guidance matrix (AGM).
- Training your subordinates to know, understand, and execute targets in their zones.
- Clearing indirect fires.

FIRE SUPPORT SYSTEMS AND CAPABILITIES (FM 6-71)

Fire support is the collective and coordinated use of indirect fire weapons, armed aircraft, and other lethal and nonlethal means in support of a battle plan. Fire support includes mortars, field artillery (FA), naval gun fire (NGF), and air-delivered weapons. Nonlethal means are electronic warfare (EW) capabilities of military intelligence organizations, illumination (illum), and smoke. The combined arms commander employs these means to support the scheme of maneuver; to mass firepower; and to delay, disrupt, or destroy enemy forces in depth. Fire support destroys, neutralizes, and suppresses enemy weapons, enemy formations, and enemy indirect fire systems.

■ MORTARS ■

The FSO should plan and control your mortar fires to ensure they are integrated into the overall fire plan. Mortars are very effective against lightly protected personnel and for obscuration, illumination, and close-in defensive fires.

Mortar considerations include the following:

- They are the most responsive FS assets of the battalion.
- They provide highly responsive white phosphorus (WP) and illumination to the task force (TF) commander.
- They are easily detected by counterbattery radars.
- The range differences between the various munition types (high explosive [HE], WP, illum) necessitate different positioning considerations.
- They can carry only limited amounts of ammunition.
- Clearance of fires, including mortars, must be addressed in the commander's guidance and maneuver rehearsal process.

U.S. MORTAR CAPABILITIES

TYPE WEAPON	RANGE (METERS)		MAXIMUM FPF WIDTH (METERS)	WEIGHT (POUNDS)	RATES OF FIRE (ROUNDS/MINUTE)	
	MINIMUM	MAXIMUM			SUSTAINED	MAXIMUM
60-mm mortar HE M720/M889 HE M49A4	70 45	3,500 1,830	60	18-45	20	30
81-mm mortar (M29A1) HE M374A2 HE M374A3	70 73	4,600 4,790	140/4 Tubes	98	8	25

U.S. MORTAR CAPABILITIES						
TYPE WEAPON	RANGE (METERS)		MAXIMUM FPF WIDTH (METERS)	WEIGHT (POUNDS)	RATES OF FIRE (ROUNDS/MINUTE)	
	MINIMUM	MAXIMUM			SUSTAINED	MAXIMUM
81-mm mortar HE M329A1 HE M329A2	80 73	5,800 4,790	40/4 Tubes	93	15	30
107-mm mortar HE M329A1 HE M329A2	920 770	5,650 6,840	240/6 Tubes 120/3 Tubes	675	3	18
120-mm mortar	200	7,200	360/6 Tubes 180/3 Tubes	320	4	15

■ FIELD ARTILLERY ■

The mission of the field artillery is to destroy, neutralize, or suppress the enemy by cannon, rocket, and missile fire and to assist in integrating all fire support into combined arms operations. Normally, one FA battalion is assigned a direct support (DS) mission to a committed maneuver brigade. However, additional FA units may be assigned as reinforcing (R) or general support reinforcing (GSR) by the force FA commander.

Field artillery considerations include the following:

- It provides first round fire-for-effect (FFE) capability.
- It is an area fire weapon. However, point targets can be destroyed by using Copperhead (Cphd), a terminal guidance munition (TGM).
- It has a limited ability to survive enemy ground, air, and artillery attacks.
- It is best employed when massed on observed targets.
- It must be integrated with the maneuver plan and not be considered as an afterthought.
- Early in the decision-making process, the brigade staff must identify and coordinate position areas for firing units.

U.S. ARTILLERY CAPABILITIES (FM 6-71)							
TYPE WEAPON	RANGE (METERS)		MAXIMUM RANGE RAP METERS	MAXIMUM FPF WIDTH METERS	WEIGHT (POUNDS)	RATES OF FIRE (ROUNDS/MINUTE)	
	MINIMUM	MAXIMUM				SUSTAINED	MAXIMUM
105-mm (M119A1)		14,000	19,000	210	4,520	3	5
105-mm (M102)		11,500	15,000	210	3,339	3	10
105-mm (M101A1)		11,270	15,000	210	4,980	3	10
155-mm (M114A1/A2)		14,600	19,400	300	12,700	1	4
155-mm (M109A3/A4)		18,100 M864 (ERDPICM)	23,500	400	55,000	1	4
155-mm (M109A5/A6)		22,200 M864 (ERDPICM) 28,400	30,000	400	55,000 (A5) 63,000 (A6)	1	4
155-mm (M198)		18,100 M864 (ERDPICM) 28,400	30,000	400	15,800	Varies	4
MLRS (M270) ATACMS	8,000 Classified	32,000+ 100,000+	NA NA	NA NA	54,600 54,000	NA	12 1 OR 2< 10 Sec

LEGEND:

ATACMS = Army tactical missile system
ERDPICM = Extended range dual-purpose improved conventional munitions
MLRS = Multiple launch rocket system
NA = Not applicable
RAP = Rocket-assisted projectile
Sec = Second

ILLUMINATION CAPABILITIES (FM 6-71)					
TYPE WEAPON	RANGE (METERS)		BURN RATE (Seconds)	RATE OF CONTINUOUS ILLUMINATION (Rounds/Minute)	DIAMETER OF AREA ILLUMINATED (METERS)
	MINI-MUM	MAXI-MUM			
107-mm/ M335A2	440	5,490	90	1	800
105-mm/ M314A3	-	11,500	60	2	800
155-mm/ M485A2	-	17,500	120	1	1,000
120-mm/ M91 M930	 200 200	 7,100 7,200	 60 60	 2 2	 1,500 1,500
81-mm/ M853 M301A3	 300 100	 5,060 950	 60 60	 2 2	 650 360
60-mm/ M721 M83A3	 200 725	 3,500 950	 25 25	 4 4	 500 300

SMOKE CAPABILITIES (FM 6-71)			
DELIVERY SYSTEM	TYPE ROUND	TIME TO BUILD EFFECTIVE SMOKE (MINUTES)	AVERAGE BURNING TIME (MINUTES)
155-mm	WP (M110A1) smk (M825)	1/2 1/2	1 to 1 1/2 5 to 10
105-mm	WP HC	1/2 1 to 1 1/2	1 to 1 1/2 3
107-mm/120-mm	WP	1/2	1
81-mm	WP	1/2	1
60-mm	WP	1/2	1

TACTICAL MISSIONS

The artillery normally is assigned one of four tactical missions to support the operation effectively. They are as follows:

Direct support (DS) - an FA unit provides close and continuous fire support to the unit. The FA commander positions his firing batteries to best provide support, but must clear movement and use of terrain with the maneuver commander responsible for the ground.
Reinforcing (R) - an FA unit augments the fires of another FA unit. An FA unit can reinforce only one other FA unit. Firing batteries are positioned by the reinforced unit.
General support reinforcing (GSR) - an FA unit furnishes fires for the entire force within its range and reinforces the fires of another FA unit as a second priority.
General support (GS) - an FA unit provides fires in support of the entire force within its capability.

For a maneuver brigade, the DS FA unit is, for practical purposes, in general support to the brigade. In the offense, FS assets provide continuous fire support for all phases of the attack. Therefore, in addition to the DS artillery, other artillery with R and GSR missions may be available. Extra fire support will weigh the main attack. During defensive operations, it is more desirable to keep fire support centralized and under the FA commander's control. This centralized control results in flexibility throughout the sector and is accomplished through assigning more GSR and GS missions.

REMEMBER

Once the battle begins, FA missions can change, depending on your situation. You may start with four battalions supporting an attack and then change to one or two battalions supporting an exploitation or a pursuit. Also, you may have only one or two battalions in the main battle area (MBA); but as the battle matures and the thrust of the main attack is known, you may receive two to four battalions.

EQUIPMENT: THE DIGITAL WORLD

Initial fire support automated system (IFSAS) is the newest FS automation software. Running on a lightweight computer unit (LCU), this proven software allows all artillery and FS cells to network with each other (brigade and battalion fire support elements [FSEs], battalion fire direction centers [FDCs], brigade and division artillery [DIVARTY] counterfire cells, and division and corps FSEs).

The advanced field artillery tactical data system (AFATDS) is the automated FS system being developed as the replacement to IFSAS and LTACFIRE. AFATDS is fire support's piece of the Army tactical command and control system (ATCCS) and will fully interoperate with the maneuver control system (MCS), all source analysis system (ASAS), forward area air defense command, control, communications, and intelligence (FAADC^{3}I), and the combat service support control system (CSSCS).

ARTILLERY TARGET INTELLIGENCE

Artillery target intelligence can come from many sources, such as the following:

- **Scouts (air and ground), combat observation/lasing teams (COLTs), OH-58Ds, company FSOs, and forward observers (FOs).**
- **Electronic intelligence (ELINT) sources such as low-level voice intercept (LLVI) and remotely monitored battlefield sensor system (REMBASS).**
- **Human intelligence (HUMINT) sources such as enemy prisoners of war (EPWs) and local nationals.**
- **Weapons-locating radars (AN/TPQ-36 and AN/TPQ-37).**
- **Unmanned aerial vehicles (UAVs).**
- **Division and corps FSEs.**
- **Higher HQ sources (joint surveillance target attack radar system [J-STARS], area security information center).**

AIR SUPPORT

A tactical air control party (TACP) is normally attached at the maneuver brigade and TF HQ. The TACP advises the Army commander, operates the Air Force air request net, keeps the air support operations center at corps HQ informed, and controls the final attack for CAS.

Close air support considerations include the following:

- **It extends the maneuver commander's battle space.**
- **It delivers and helps guide smart laser munitions.**
- **It requires extensive coordination when employed close to friendly forces.**
- **It requires long lead time for missions.**
- **It requires suppression of enemy air defenses (SEAD) at the target area and may interrupt indirect fires because of risk to aircraft unless the SEAD is closely coordinated. (For additional information on USAF minimum safe distance requirements for surface target engagements, see figure below [p. 6-9].)**
- **It requires planning for an alternate attack means for missions.**

U.S. CLOSE AIR SUPPORT AIRCRAFT		
AIR CRAFT	**SERVICE**	**CHARACTERISTICS**
AV-8	USMC, USN	VTOL CAS aircraft; subsonic; typical load 4,000 lbs, maximum load 9,200 lbs; 5,000-lb ordnance load; 25-mm Gatling gun.
A-10 OR O/A-10*	USAF, AFRES ANG	Specialized CAS aircraft; subsonic; typical load 6,000 lbs, maximum load 16,000 lbs; 30-mm gun.
F-15E	USAF	Multirole aircraft; priority to air to ground; also has an excellent platform for computed air-to-ground delivery; supersonic; maximum load 24,000 lbs. Night all-weather.
F-16*	USAF, AFRES, ANG	Multirole aircraft; complements the F-15 in an air-to-air role; supersonic; typical load 6,000 lbs, maximum load 10,500 lbs. Night all-weather - some models PGM capable.
F-18*	USN, USMC	Multirole fighter; wide variety of air-to-surface weapons; typical load 7,000 lbs, maximum load 17,000 lbs; 20-mm gun and air-to-air missiles.
AC-130*	USAF, AFRES	Specialized CAS and/or RACO aircraft; propeller driven. Two models: the A model is equipped with two 7.62-mm miniguns; the H model is similar, except it has no 7.62 miniguns and one of the 40-mm guns is replaced with a 105-mm howitzer. Both models have advanced sensors and target acquisition systems including forward-looking infrared and low-light TV. Weapons employment accuracy is outstanding. This aircraft is vulnerable to enemy air defense systems and must operate in a low ADA threat environment.
* Aircraft with FM communications.		
NOTE: Typical load is average load for typical support mission; maximum load is the amount the aircraft can carry in an ideal situation.		
LEGEND:		
AFRES= Air Force Reserve		RACO = Rear area combat operations
ANG= Air National Guard		USMC = United States Marine Corp
lb = pound		USN = United States Navy
PGM = Precision Guided Munitions		VTOL = Vertical takeoff and landing

USAF MINIMUM SAFE DISTANCES FOR SURFACE TARGETS (COMBAT)		
WEAPON	**PROTECTED TROOPS (METERS)[1]**	**UNPROTECTED TROOPS (METERS)[2]**
Bomb: 1,000 pounds and larger	240	1,000
Bomb: 750 pounds low drag	195	750
Bomb: 750 pounds high drag	150	750
Bomb: 500 pounds low drag	220	500
Bomb: 500 pounds high drag	145	500
Bomb: less than 500 pounds	145	500
CBU: clamshell only	1,000	1,000
CBU: aft and downward, dispenser only	105	105
Rockets: all pods	220	220
Cannon and guns: 20-mm, .50 caliber, 7.62-mm 30-mm	 25 50	 25 50
Napalm: Parallel to friendly forces Overhead of friendly forces	 75 115	 75 115

[1] Protection refers to bunkers, trenches, fighting positions, or armored vehicles.

[2] Entries are based on figures extracted from USAF ammunition tables and consider delivery system errors. Also they are based on USAF SOP; the FAC concerned may alter them.

NOTE: Consideration must be given to type ordnance used, delivery system attack procedures used, and local weather conditions. Any of these can greatly alter the MSD for a given target.

LEGEND:
CBU= Cluster bomb unit
FAC= Forward air controller
MSD = Minimum safe distance

NAVAL GUNFIRE

Naval gunfire provides large volumes of immediately available, responsive fire support to land combat forces operating near coastal waters.

NAVAL GUNFIRE CHARACTERISTICS							
SHIP	GUN SIZE	CALIBER	RANGE (METERS)		RATE OF FIRE (ROUNDS/ MINUTE)		AMMUNITION AVAILABLE
			MAXI-MUM	MINI-MUM	MAXI-MUM	MINI-MUM	
Guided missile cruiser (CGN and CG)	5-inch	54	22,999	910	40	20	HE, WP, illum
Guided missile destroyer (DDG)	5-inch	54	22,999	910	40	20	HE, WP, illum
Destroyer (DD)	5-inch	54	22,999	910	40	20	HE, WP, illum
Guided missile frigate (FFG)	76 mm	38	15,700	910	80	10	HE, WP, illum
Frigate (FF)	5-inch	54	22,999	910	40	20	HE, WP, illum
Amphibious assault ship (LHA)	5-inch	54	22,999	910	40	20	HE, WP, illum
LEGEND: AP= Armor-piercing CG= Guided missile cruiser CGN= Guided missile cruiser, nuclear							

Naval gunfire considerations include the following:

- It has a flat trajectory that makes it effective against vertical-face targets but ineffective against rear-slope targets.
- It can deliver a high volume of fire in a short period of time.
- It may provide precision guided munitions.
- It has a large range error. Always try to avoid firing over or near friendly units. Fire parallel to the forward line of own troops (FLOT).
- It is less accurate in rough seas.
- It has limited communications between ship and shore.
- The only US NGF weapon system available now is the 5-inch/54 found primarily on destroyers.
- It is generally coordinated and executed through the support of liaison personnel organic to the air and naval gunfire liaison company (ANGLICO).

TARGET ACQUISITION

The FA battalion supporting a light brigade will have an organic AN/TPQ-36 Firefinder weapons-locating radar. Heavy brigades may have an AN/TPQ-36 attached to the brigade or the brigade's DS FA battalion, but none are organic. Aerial fire support teams may be placed under the OPCON of your brigade or FA battalion. A UAV may be available to the brigade for target acquisition. Additionally, the FSO will have access to information the AN/TPQ-37 provides that is normally retained under divarty or FA brigade control to fight the counterfire battle.

■ AN/TPQ-36 AND AN/TPQ-37 FIREFINDER RADARS ■
(FM 6-121, Sep 90)

For planning purposes, the AN/TPQ-36 radar has a maximum detection range of 12 kilometers for artillery and mortars and 24 kilometers for rockets. The AN/TPQ-37 radar has a maximum detection range of 30 kilometers for artillery and 50 kilometers for rockets. Each radar provides first-round FFE accuracy. Firefinder radars are normally considered HVTs by the enemy.

■ BATTLEFIELD OBSCURATION ■

Battlefield obscuration can be provided by artillery, mortars, smoke pots, rockets, hexachloroethane (HC) (smoke) grenades, and large area smoke generators. Employment considerations include the following:

- Mortars are the weapons system of choice to provide smoke quickly on the battlefield.
- The need for artillery smoke must be identified early in the planning process.
- The brigade FSO must allocate smoke on the basis of your guidance.
- Bottom line, all of the other smoke assets available must be exhausted before using your FA assets.

FIRE SUPPORT PLANNING, PREPARATION, AND EXECUTION (FM 6-71)

Fire support planning ensures that all available FS assets are employed in concert with your scheme of maneuver. A dialogue between you and your FSO must take place. Each time you sit down with your S3 to discuss current or future plans, concepts, or COA, your FSO should be present.

Top-down fire planning gives the maneuver brigade an FA plan that focuses the FS effort exactly where the combined arms commander intends to fight the battle. It provides guidance, allocates resources, assigns target execution responsibility, and fully supports the combined arms commander’s scheme of maneuver.

Formal fire planning is conducted through a deliberate top-down process, with bottom-up refinement. Additionally, the most experienced field artillerymen in the force, the FSCOORD and the brigade FSO, develop the initial fire plan. In high-tempo operations, the top-down fire planning process provides a workable plan in a relatively short time.

The brigade fire plan contains only those targets the FSCOORD thinks are essential to support the commander's intent. The remaining targets are allocated to the task forces, according to priorities for FA support. The TF commander plans targets to support his plan on the basis of the targets he was allocated by brigade. The TF commander and FSO allocate mortar targets in the same manner in which the brigade allocated its artillery targets.

REMEMBER

If it is important enough to target, it is important enough to have eyes on target. At the company or team level, the commander is responsible for ensuring assigned targets are observed, have a trigger, and are rehearsed. This does not mean that a maneuver commander cannot request additional targets; just be sure they are justified.

KILLER MISSIONS

. . . IN A PERFECT WORLD

BN FFE MISSION STANDARDS (BN 3)
- **1ST VOLLEY, 3.40 MINUTES**
- **2ND VOLLEY, 1.0 MINUTE (SUSTAINED RATE)**
- **3RD VOLLEY, 1.0 MINUTE (SUSTAINED RATE)**

TOTAL MISSIONS TIME: 5.4 MINUTES (APPROX 6.0 MINUTES)
TOTAL BN 3s AVAILABLE IN 1 HOUR: 10 MISSIONS

. . . IN REALITY

- **COUNTERFIRE, GROUND, AND AIR THREAT**
- **COMM PROBLEMS . . . EW THREAT**
- **OPERATIONAL READINESS**
- **1 MINUTE SHIFT TIME FOR 155-MM HOWITZER**
- **OTHER MURPHIES**
- **TOTAL BN 3s AVAILABLE IN 1 HOUR: 5 TO 7 MISSIONS**

LEGEND:

APPROX= Approximately	**BN= Battalion**
COMM= Communication	**MM= Millimeter**

In a mechanized environment, most battles are decided in the first 90 minutes. The number of "killer" fire missions your artillery can shoot during this period is limited, as shown above (in a perfect world). When the factors normally affecting artillery units are considered, the number of "killer" fire missions is further reduced as shown above (in reality).

Look at the fire plan from this perspective; your targeting effort must focus on critical events to accomplish your intent.

TACTICAL DECISION-MAKING PROCESS (FM 6-71)

Top-down fire planning is conducted throughout the tactical decision-making process. The considerations listed below illustrate how to integrate fire support into the tactical decision-making process.

■ INTELLIGENCE PREPARATION OF THE BATTLEFIELD ■

Intelligence preparation of the battlefield, while not a separate step in the tactical decision-making process, warrants special consideration. The IPB affects FS planning in the following ways:

- Situational templates are the start point for the targeting effort. **Poor templates used in the war-gaming process result in poor targeting.**
- High-value targets are developed initially from doctrinal templates and refined by the situation templates. HVTs are those assets that the enemy commander requires to successfully complete his mission. During the war-gaming process, HPTs are identified. HPTs are those HVTs that must be acquired and successfully attacked for the success of your mission.
- Targets generated during the IPB process are included in the initial stages of the top-down fire planning process.

■ MISSION ANALYSIS ■

The status of the COLT and FISTs must be determined during the mission analysis phase. This applies to both personnel and equipment, especially the FISTV. Determine the following:

- Can shortages be organized and placed in the most critical areas?
- Is the FISTV a high-maintenance priority?

The OH-58D helicopter is an important consideration in mission analysis. The need for this asset must be identified early and requested to the division.

■ COMMANDER'S GUIDANCE FOR FIRE SUPPORT ■

Having completed the estimate process, the brigade staff comes together with you and briefs their estimates. After the mission analysis briefing, you issue your guidance to initiate the development of COAs. Your guidance at this stage **is critical** to the development of a viable FS plan that supports your overall intent. It should include the following:

- Attack criteria.
- Engagement criteria. This is the size and type of units you want engaged at different points in the battle.
- Priorities for target engagement if you have enough information (situation dependent). This is when HVTs are identified.
- Guidance for special munitions (illumination, smoke, Copperhead, FASCAM).

- Specify how, when, and where fire support should be employed in the development of COAs.

Consider having your FSO give you a backbrief to ensure that your guidance was clearly understood.

■ ATTACK GUIDANCE ■

As the combined arms commander, you must decide what effect fire support must have on a particular target. Most important is the interpretation of terminology. The maneuver definition of destruction is much different than the field artillery's definition. Articulate your desired effects in exact numbers by vehicle type or unit size. The three types of artillery effects are as follows:

- **Destruction** - destruction renders an enemy force permanently combat ineffective unless it is reconstituted or so damaged that it cannot function as intended nor be restored to a usable condition without being entirely rebuilt (FM 6-20-10, Final Draft, Feb 95). If a desired percentage is expressed, the commander and FSCOORD must agree on what is achievable by available FS assets.
- **Neutralization** - FM 101-5-1 definition of neutralization leads the commander to understand the target will not be able to interfere with a particular operation. Neutralization renders the target ineffective or unusable for a temporary period, pending repair or reconstitution. Key questions the FSCOORD or FSO must ask are *when* and *how long* does the commander want the target rendered incapable of interfering.
- **Suppression** - suppression prevents effective fire on friendly forces. The FSCOORD or FSO must ask the commander when and how long he desires the target to be suppressed.

REMEMBER

When possible, request that the DS FA battalion S3 come to the brigade TOC when your staff is planning and your guidance is issued. The DS FA battalion S3 then gains firsthand knowledge of the upcoming operation and can return to his TOC to begin the FA support plan. If the DS FA battalion S3 cannot be present, ensure your FSO passes your guidance to the DS FA battalion TOC to allow their planning process to begin.

■ EXAMPLE ATTACK GUIDANCE MATRIX ■

PURPOSE/EVENT: ATTACK THROUGH THE SECURITY ZONE				
HPTL	**WHEN**	**HOW**	**EFFECT**	**REMARKS**
COP	P	GS ARTY	N	PLAN IN INITIAL PREP
RSTA/OPS	P	GS ARTY	N	PLAN IN INITIAL PREP
2S1/2S3	P	MLRS	N	PLAN IN INITIAL PREP
2S6/SA9/ SA13	P	GS ARTY	S	SEAD FOR AVN OPS
REGT CP	A	MLRS	N	
RESERVE BN	P	AVN BDE	D	INTENT TO ATTACK RESERVE BN IN EA HOT

LEGEND:

COP = COMMAND OBSERVATION POST
RSTA = RECONNAISSANCE, ACQUIRED
N = NEUTRALIZE
I = IMMEDIATE TARGET ACQUISITION
S = SUPPRESS
P = PLANNED
D = DESTROY
A = AS

NOTE:

THIS IS ONLY A TYPE ATTACK GUIDANCE MATRIX. ACTUAL MATRICES ARE DEVELOPED BY THE G3 OR S3 AND THE FSE ON THE BASIS OF THE TACTICAL SITUATION.

COURSE OF ACTION DEVELOPMENT

COA development should not limit consideration only to field artillery but should consider all FS systems. The FSO must develop the COAs with the maneuver S3 if the synchronization of maneuver and fire support is to be maximized. If possible, the DS BN S3 should participate also. The repositioning of artillery and other FS assets must be determined so that the operating tempo (OPTEMPO) is maintained without a degradation of fire support.

REMEMBER

The primary enemy threats to your artillery are counterfire, air attack, and ground attack. The presence of any or all of these threats will dictate appropriate positioning and movement techniques. The DS FA battalion S3 ultimately has two key positioning considerations: position the artillery to support your FS plan and survive to provide uninterrupted support for current and future operations. He must also understand the maneuver commander's planned use of available terrain to avoid conflicts.

COURSE OF ACTION ANALYSIS AND COMPARISON (WAR-GAMING) (FM 6-71)

War-gaming is the most critical step in the decision-making process. As the staff conducts the action-reaction-counteraction drill, the FSO is actually developing the fire plan by placing targets on the map to support your scheme of maneuver. An effective war-gaming process will:

- Determine the HPTs to allow development of the high-payoff target list.
- Synchronize fire support with other BOSs and allow initial development of the fire support execution matrix (FSEM).
- Define critical events for brigade and TF FSOs.
- Provide an 80-percent solution. For the process to work, you must have given the FSO guidance for fire support.
- Position the artillery in general position areas. Consider having the DS battalion S3 present during war gaming.

REMEMBER

The effectiveness of your fire plan can usually be determined by analyzing your war-gaming procedures. The war-gaming process is a critical event that must include the FSO. Failure to include him in this process will result in a fire plan developed in a vacuum. Make him part of your planning process.

FIRE SUPPORT EXECUTION MATRIX

ANNEX F: (FIRE SPT) TO OPORD — SCHEME OF FIRES: (SEE FIRES PARAGRAPH)

PHASE OR EVENT	COUNTERRECON	MRR FWD OF PARIS	2 MRBs IN EA COLD	EA HOT	TM A COMMITTED	TM C BACK TO PL DUBLIN
TF CONTROL				2 CAS →	→	
TM ALPHA	FA POF AB 1001				MORT POF →	→
TM CHARLIE	FA POF2 →	→ A1B	FA POF AB1002	2 CAS FA POF2 →	→	FA POF A4B
TM DELTA			MORT POF	FA POF A3B FA FPF	FA POF A2B	
TM MECH		MORT POF	FA POF2	MORT POF FA FPF	FA POF2 →	→
SCOUTS	OPCON TM A	FA POF AB2018				
MORTARS	SEC 1 DS TM A SEC 2 PAI AB1003	SEC 1 PA2 AB 1005 → SMK SEC 2 PA3 AB1005 →	→	SEC 1 PA4 AB3001 → SEC 2 PA5 AB3001 →	→	→
COLT 45	OPCON TM A	POSITION VIC BP10 AB1004	CPHD AB1005 IN EA COLD			
FSCMs	PL BLUE CFL ON ORDER PL WHITE ON ORDER PL GREY →			ACA BLUE ON ORDER	→	→

FA ORG FOR CBT 2-35 FA (155, SP) DS 2 BDE 3-3 FA (155, SP) R 2-35 FA	MORTARS PA1: NB543657 AoF1800 PA2: NB564678 AoF2000 PA3: NB506629 AoF1800 PA4: NB499602 AoF2200 PA5: NB486599 AoF2000	AMMO AVAILABLE 15 BN 3 RDS DPICM 30 MIN (400 x 500) FA SMK 30 MIN MORT SMK 12 CPHD ENGAGEMENTS	FSO LOC: WITH TF CDR SUCCESS OF CMD: C-D-A-MECH
CAS 4 A-10 W/MA VERICK ACA BLUE ON ORDER WHEN CAS EMPLOYED (SEE OVERLAY)	HIGH-PAYOFF TARGETS CEN RECON: DIV/REGT RECON MBA: ENG BREACHING, MRC, ADA ASSETS	ATTACK GUIDANCE DESTROY: ADA, C2, RECON NEUTRALIZE:>MRC, FS	REFINEMENT CUTOFF: XX0200 SEP XX FS REHEARSAL TIME: XX0400 SEP XX

COORDINATING INSTRUCTIONS:
1. COORDINATE WITH TF FSO FOR PADS TIME.
2. REHEARSALS WILL INCLUDE BACKUP OBSERVERS.
3. SCOUT AND COLT WILL PROVIDE GRIDS FOR STAY-BEHINDS FOR NFAs.

Figure 6-1. Task Force Fire Support Execution Matrix.

■ DECISION ON THE COURSE OF ACTION AND SCHEME OF FIRES ■

After the proposed COAs are briefed, you announce your decision and state your concept of the operation. The fires paragraph should clearly articulate the scheme of fires. Specificity is the key.

EXAMPLE 1

Fires (3a[2]). **The purpose of fires is to initially support the counterreconnaissance battle and then provide fires in support of the brigade's deliberate defense along the FEBA to defeat the lead regiment. On order, provide fires in support of the brigade counterattack.**

Phase I (counterreconnaissance). **Use Copperhead to destroy reconnaissance vehicles (HPTs). Priority of fires to TF 3-35. COLT 1 and COLT 2 are attached to TF 3-35. Use of illumination requires brigade approval during this phase.**

Phase II (rearward passage of lines). **A 20-minute counterpreparation will be fired in support of TF 3-35 passage of lines. Priority of fires remains with TF 3-35. Twenty minutes of artillery smoke is allocated to TF 3-35.**

Phase III (MBA defense). **Indirect fires will initially disrupt the lead battalions between PL WALT and PL BOB and then suppress the lead elements as they enter EA KILL. Priority of fires is to TF 2-6, on order to TF 2-8. Copperhead will destroy breaching assets (HPT). COLT 3 is attached to TF 2-6 and allocated one Copperhead priority target. FASCAM will be fired when the second echelon is committed to isolate the lead regiment in EA KILL. On order, TF 2-8 will execute four CAS sorties to attrit the second echelon regiment. TF 2-6 and TF 2-8 are both allocated one battery FPF each. ACA Blue will be implemented by the brigade FSE.**

Phase IV (counterattack). **Brigade FSE will plan and control a 15-minute preparation to support the brigade counterattack on OBJ EAGLE. Priority of fires to TF 2-9. The corps FSCL is PL DICK; the division CFL is PL SABER; on order, PL JAY.**

EXAMPLE 2

The purpose of fires is to support the movement of the brigade to OBJ HAMMER, to provide close fires in support of 1st brigade's seizure of OBJ HAMMER, and to delay and neutralize the second echelon regiment beyond PL Yellow. Once OBJ HAMMER is seized and the defense is reestablished along PL Blue, fires will neutralize remaining elements of the 2d echelon regiments. Priority of fires to TF 3-7 during the movement to and seizure of OBJ HAMMER. On order, priority shifts to TF 1-64 in the defense. COLT 1 and priority of Copperhead is allocated to TF 3-7, on order to TF 1-64 in the defense. FASCAM is retained at division level. No DPICM will be fired on OBJ HAMMER. No smoke or illumination will be fired without the brigade commander's approval.

ABBREVIATIONS AND ACRONYMS

bde = *brigade*
cbt = *combat*
cdr = *commander*
div = *division*
fwd = *forward*
loc = *location*
mech = *mechanized*
mort = *mortar*
MRB = *motorized rifle battalion*
MRC = *motorized rifle company*
MRR = *motorized rifle regiment*
org = *organization*
PADS = *position and azimuth determining system*
PL = *phase line*
rd = *round*
regt = *regiment*
sec = *section*
smk = *smoke*
SP = *self-propelled*
spt = *support*
vic = *vicinity*
w = *with*

FIRE SUPPORT PREPARATION

The preparation phase is characterized by conducting rehearsals and refinement. The paragraphs below discuss these key concepts.

The combined arms rehearsal is required to synchronize all the BOSs before combat operations. Any last-minute change to the operation made after the rehearsal may cause a reduction in the effectiveness of your fire support.

REMEMBER

The effectiveness of your maneuver rehearsal is increased if the fire supporters are present and actively participating. Do not allow your subordinate commanders to leave them back at the track doing "more important" duties. Make sure FS events are depicted on the terrain model. Check to see if your FSE has a supply of rehearsal props, such as string, 3 x 5 cards, and cotton balls (to replicate smoke), to augment your TOCs supply of props.

A FS rehearsal will be conducted in conjunction with the maneuver rehearsal, or conducted separately, preferably before the maneuver rehearsal. Key participants will include the artillery battalion, mortars, all FSEs, observers, and other FS agencies such as the ALO. The focus of this rehearsal is on the FS system from shooter to executor.

■ REFINEMENT ■

Refinement of targets is an essential part of the preparation phase. Initial targeting is usually based on map spots, which requires the establishment of actual target locations on the basis of the terrain.

REMEMBER

A key to refinement is to ensure your FSE has a system to check that the purpose of the refined targets is still the same. Failure to check the refined targets may result in fires that no longer meet your original guidance.

When establishing the target cutoff time, consult with the DS FA battalion S3. He and his staff have the greatest challenge reacting to last-minute changes. The DS FA battalion S3 best knows the capabilities of his staff and firing units to react to last-minute changes in the fire plan.

■ EXECUTION ■

During the battle, the positioning of the FSCOORD and FSOs is dependent on METT-T. Some considerations include:

- Command and control requirements to execute the fire plan.
- Communications assets available to the TF FSO and FSCOORD.
- The payoff in traveling with the commander versus being in FM contact.
- The FSO's ability to control fires from your position.

FIRE SUPPORT EMPLOYMENT (FM 6-71)

Applying the appropriate tactics, techniques, and procedures for employing fire support in combat operations is vital. Gaining an appreciation of how to apply fire support in offensive and defensive operations will help you develop your guidance for fire support. This section identifies the considerations needed to plan and execute offensive and defensive operations.

■ OFFENSIVE OPERATIONS ■

Decentralized execution, with most of the firepower assigned to the main effort, characterizes fire support for offensive operations. Your control of the rate of movement of the force is paramount for effective synchronization of fire support and maneuver.

■ MOVEMENT TO CONTACT ■

A movement to contact is characterized by vague intelligence, limited reconnaissance, and the potential for rapidly changing situations. The overall plan needs to address the following issues:

- Plan targets on the basis of the S2's IPB.
- Ensure immediately responsive fires are provided initially to the lead element and then to the lead company as contact develops.
- Assign your mortar platoon direct support to the advance guard company or team to provide immediately available fire support upon contact.
- Ensure effective positioning of FOs and COLTs (mechanized and light forces only) to augment your scouts.
- Use your reserve company or team FISTs to augment flank security elements to get additional *eyes forward*.
- Ensure that artillery movements are synchronized with the OPTEMPO of the maneuver force and the FS requirements of the FS plan.
- Plan fires and smoke to support possible breaching operations.
- Maximize the use of priority targets along the axis of advance. (See Priority Target Engagement Techniques, this chapter.)
- Ensure the coordinated fire line (CFL) is kept forward of the lead element to protect the force but close enough to allow responsive engagement of targets. (See Fire Support Coordination Measures, this chapter.)

■ HASTY ATTACK ■

A hasty attack, by its very nature, is constrained by the amount of time to prepare. To overcome this challenge, consider the following:

- A simple and rapidly produced FS plan is essential to effectively integrate all FS assets.
- You should position your artillery as far forward in the march column as the fire plan dictates.
- The tactical mission of the mortars may change once the maneuver force transitions to the hasty attack.
- The primary mission of fire support is suppressing direct fire systems affecting maneuver.

■ DELIBERATE ATTACK ■

In contrast to hasty attacks, deliberate attacks are fully synchronized operations that employ the effects of every available asset against the enemy defense. When your FSO plans fires to support a deliberate attack, consider the following:

- Synchronize the FS plan with the S2's R&S plan.
- Weigh the benefits versus the drawbacks of shooting preparatory fires.

REMEMBER

The key to a preparation is to time the arrival of your maneuver forces just as the preparation is shifted or curtailed. Synchronizing your arrival with the end of the preparation allows you to take advantage of the shock effect and confusion created by the preparation.

- Pre-position ammunition in firing positions to reduce Class V resupply problems.
- Plan fires to support breaching operations.
- Ensure that a specific company, team, or observer is designated to control fires on the objective with backups for key targets.
- Plan FM (voice) and visual (backup) signals for the lifting or shifting of indirect fires on the objective.
- Enforce target refinement cutoff times.
- Articulate the number of elements or size of elements you want engaged during each phase of the operation.
- When determining FSCMs, consider the minimum safe distance (danger close) for each weapon system.

■ EXPLOITATION AND/OR PURSUIT ■

Use your indirect fires to sustain your momentum. It is critical that the possibilities for exploitation be addressed early in the planning process. The DS battalion movement plan should include exploitation and pursuit. Missions may have to be fired hip-shoot style. Never let your artillery fall behind. Use the artillery's OPTEMPO to gauge your rate of advance. Other considerations include the following:

- Use artillery to neutralize and fix bypassed pockets of resistance until follow-on friendly forces can deal with them.

REMEMBER

A bypassed enemy platoon may not pose a real threat to an M1 or M2 platoon but is an artilleryman's nightmare.

- Plan fires to support hasty attacks.
- Consider using CAS and attack helicopters, which are well suited for exploitation.
- Coordinate with your FSO to establish FSCM between exploiting and converging forces.
- Keep the FSO advised of locations of lead elements to facilitate positive clearance of fires.
- Use FASCAM to delay or fix the enemy. Ensure that your FSO considers the loss of maneuver space.

■ DEFENSIVE OPERATIONS ■

In defensive operations, fire support is generally used against the enemy at maximum range to disrupt, delay, and attrit his forces before they come into range of your direct fire systems. Fire support assets extend the commander's battle space. Some primary uses of fire support are to limit the enemy's options, disrupt his coordination, and affect the closure times for follow-on elements.

Mobile Defense. Commanders conducting a mobile defense take advantage of terrain and depth, obstacles, and mines while employing firepower and maneuver to wrest the initiative from the attacker. Fire support considerations include the following:

- If your brigade is designated as a striking force, consider retaining your habitual DS battalion.
- Ensure that FSCMs are planned for each phase of the defense.
- Position FS assets to support commitment of a striking force.

Area Defense. In an area defense, the bulk of forces are deployed to retain ground and are organized around a static framework provided by defensive positions with interlocking fires. Fire support considerations include the following:

- Consider HPTs for each phase of the defense.
- Designate engagement criteria for each phase of the defense.
- Plan fires to support the counterreconnaissance fight.
- Consider allocating engineer assets to dig in your DS battalion and mortars for survivability.
- Plan the coordinated fire line close to your forward elements to allow rapid engagement of enemy units.
- Consider NFAs around scout, COLT, and FO positions in forward areas.
- When emplacing FSCMs, consider the minimum safe distances (danger close) of each weapon system.
- Allocate assets to provide security for radars; they are normally an HPT for the enemy.

Security Zone. Some specific FS considerations include the following:

- Augment your security zone with additional observers.
- Ensure the FSO coordinates which communications nets he will use to receive fire missions.
- Plan fires to neutralize or destroy the enemy's reconnaissance effort. Copperhead is ideal for this situation.
- Ensure that your FS assets are positioned to support the security zone fight.

Main Battle Area. Some specific FS considerations include the following:

- Keep in mind that ammunition on hand and weapons capability drive the number of targets you can expect to engage.
- Designate where you want your artillery to mass their fires on the enemy.

Main Battle Area (continued).

- Be specific in designating which key obstacles to cover with indirect fire.
- Ensure your FSO develops a fire plan that meshes the maneuver and artillery schemes of maneuver.
- Ensure airspace coordination areas (ACAs) are established along air corridors and air corridors do not overfly artillery or mortar positions.
- During rehearsals, have your commanders articulate their FS responsibilities.
- Assist the engineer officer with evaluating the advantages and disadvantages of firing FASCAM during different phases of the operation.

■ RETROGRADE OPERATIONS ■

Fire support considerations for various types of retrograde operations are discussed below.

Delay. To trade space for time while inflicting maximum damage on the enemy, you must deliver fires on enemy forces at maximum ranges and as early as possible. Artillery and CAS are ideal for this mission.

When planning fires to support the delay, ensure your FSO considers the following:

- Deep fires may require the forward positioning of observers.
- Use Copperhead to destroy command and control and engineer vehicles to disrupt and delay the enemy's movement.
- Position your mortars and artillery in depth, and ensure they are displaced by echelon or battery to ensure continuous fire support.
- Ensure your FSO has planned and rehearsed for fires to support possible counterattacks.
- Plan smoke to cover the movement of your maneuver forces.

Withdrawal. Although normally free from enemy pressure, the FSO must plan for a withdrawal under pressure. Fire support considerations include the following:

- Mass fires to allow disengagement of friendly forces.
- Augment the withdrawing force with additional observers.
- Leave the maximum feasible number of firing units forward.
- Use CAS to counter enemy attempts to disrupt the withdrawal.
- Use smoke to support the withdrawal.

Passage of Lines. The FS planning required for a passage of lines is time-consuming and emphasizes positive control of fires and continuous fire support during the passage. Fire support considerations include an exchange of information between the stationary and passing FSEs, such as:

- Unit SOP to resolve differences in operating procedures.
- Existing target lists and fire plans.

Passage of Lines (continued).

- HPT lists, attack guidance, and engagement criteria.
- Fire support coordinating measures.
- Position areas for supporting FS assets.
- A clear FS battle handover, or transfer of control, identified and approved by the maneuver commander.

Forward Passage of Lines. Fire support considerations should include the following:

- Use smoke to obscure enemy positions or screen friendly movement.
- The stationary force supports the close battle while the passing force's artillery moves through.
- The FSE of the passing force sends a liaison officer to the FSE of the stationary force.
- The CFL is positioned forward of the lead elements and continually updated.
- Fire support assets should be positioned near the passage point but not so they interfere with the stationary force.
- Fire support requirements should be identified after completion of the passage of lines.

Rearward Passage of Lines. Fire support considerations include the following:

- Use smoke to conceal movement through passage points.
- Plan fires to disengage forces.
- Plan fires to support the deception plan.
- Ensure the stationary force plans and controls counterfire.
- Position the stationary force's FS assets to provide continuous support until the passage is complete.
- Ensure positions are away from the passage points.
- Ensure the stationary force has positioning priority.
- Ensure the FSE of the stationary force sends a liaison officer to the FSE of the passing force.

PEACE KEEPING, HUMANITARIAN AND OTHER OPERATIONS

The application of fire support in peace keeping, humanitarian and other operations frequently stresses protection of the force. It is characterized by using the minimum essential force to neutralize an aggressor while keeping collateral damage to a minimum. Fire support considerations include the following:

- The ROE must clearly specify when the use of fire support is appropriate and justified.
- Clearance of fires is infinitely more complicated when operating in urban areas and foreign countries.
- Firefinder radars are key components to detecting and neutralizing belligerent indirect fire assets.

TARGETING (FM 6-20-10)

Targeting must support the commander's battle plan and reflect his intent. Targeting functions through the application of the tenets of Army operations to the specific operation planned.

Therefore, targeting is an integral part of the planning process. It begins with the receipt of a mission and continues through the development of the approved plan and into the execution of the plan. The objective of targeting is to disrupt, delay, or limit those enemy capabilities which could interfere with the achievement of friendly objectives. Targeting is based on the friendly scheme of maneuver and/or tactical plan. It includes an assessment of the weather, the terrain, and the enemy situation. The assessment identifies those enemy formations, equipment, facilities, and terrain which must be attacked or controlled to ensure success of the friendly tactical plan. The targeting process is a continual effort which is a crucial portion of the synchronization of combat power. The collection and subsequent development of targets, their attack, and the following analysis of selected target attacks all join to give the commander vital feedback on the battle.

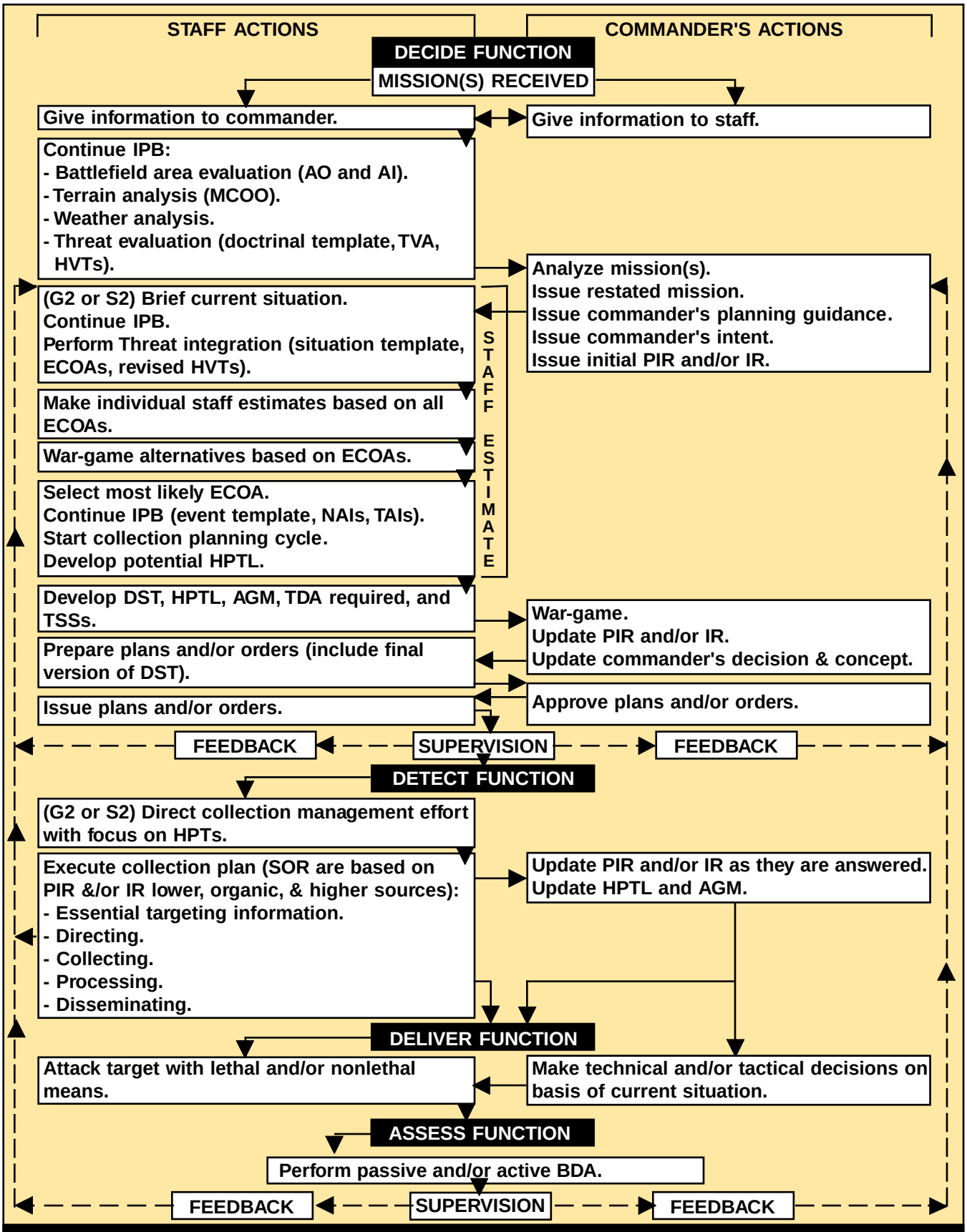

Figure 6-2. THE TARGETING PROCESS - The Decide Function (FM 6-20-10).

THE TARGETING PROCESS - The Decide Function (continued)

LEGEND:

AGM = attack guidance matrix
AI = area of interest
AO = area of operations
BAE = battlefield area evaluation
BDA = battle damage assessment
DST = decision support template
ECOA = enemy course of action
HPT = high-payoff
HPTL = high-payoff target list
IPB = intelligence preparation of the battlefield
IR = information requirements
MCOO = modified combined obstacles overlay
NAI = named area of interest
PIR = priority intelligence requirements
SOR = specific orders and requests
TE = threat evaluation
TI = threat integration
TSS = target selection standard
TVA = target value analysis